



## The Analysis of Ruminant Cattle Potential as a Source of Meat Production in East Nusa Tenggara Regency



I Ketut Sukada <sup>a</sup>

I Gede Suarta <sup>b</sup>

I Nyoman Warsa Parimartha <sup>c</sup>

### Article history:

Received: 18 January 2016

Accepted: 30 March 2016

Published: 31 May 2016

### Keywords:

Food land;

Horticultural;

LQ;

Plantation;

Ruminant;

### Abstract

East Tenggara Timur (NTT) Province that was often called by cattle source mastering ruminant livestock commodity including beef cattle was 803.450, dairy cows were 39 and Buffalo was 133.122, totally was 936.611. In regards the land area that was managed by household including the not agricultural land area was 396,19 m<sup>2</sup>, agricultural land area i.e. rice field land area was 1.228,38 m<sup>2</sup>, not rice field land area was 7.616,50m<sup>2</sup>, the land area totally was 8.844,88 m<sup>2</sup> (agricultural sense, 2013). Based on the ability, the research was conducted by the writer toward three regencies in NTT, those regencies were: Kupang, Timur Tengah Selatan (TTS) and Belu. Belu regency has ruminant cattle that looked after of food land, horticultural and plantation. The result of this research was: (1) Math relation between food land (X) towards beef cows population (Y), it was obtained  $Y = 110,23238792 - 1,7048432552 X$  and  $R^2 = 0,9838238238085$ . ( $P < 0.01$ ). (2) Math relation between plantation land area (X) towards beef cows population (Y) was  $Y = 116,59960539 - 2,4734723692 X$  and  $R^2 = 0,983288695$  ( $P < 0.01$ ). (3) Math relation between horticultural land area (X) towards beef cows population (Y) was not significantly differ ( $P > 0,05$ ). (4) The buffalo *Location Quotient* (LQ) value was 6,291957 in Kupang regency, next to the buffalo LQ value was 4,94106 in TTS regency and the buffalo LQ value was 2,076242 in Belu regency. The dairy cows LQ value was 1.457694 found in TTS regency. This research result was able to be concluded that livestock population towards food land and plantation high reality positive relation ( $R^2 = 0,98$   $P < 0,01$ ). LQ value of buffalo cattle was continuously highest obtained in Kupang regency, TTS and Belu, thus it could become buffalo cattle central for other district in NTT province. As well as, in TTS regency it could be central of dairy cattle therefore it was larger than one.

2454-2261 ©Copyright 2016. The Author.

This is an open-access article under the CC BY-SA license

(<https://creativecommons.org/licenses/by-sa/4.0/>)

All rights reserved.

<sup>a</sup> Udayana University Denpasar, Bali, Indonesia

<sup>b</sup> Udayana University Denpasar, Bali, Indonesia

<sup>c</sup> Udayana University Denpasar, Bali, Indonesia

**Author correspondence:**

I Ketut Sukada,

Faculty of Veterinary, Udayana University Denpasar, Bali, Indonesia

Email address: [ketut\\_sukada888@yahoo.com](mailto:ketut_sukada888@yahoo.com)**1. Introduction**

[Suryana \(2000\)](#) stated that was inability livestock production in country to fill full domestic need was influenced by some limitation included: (a) technology ability, even more in the production field as well as post-harvest handling, (b) the ability of livestock capital, (c) the human resources quality and (d) food availability.

NTT province is located in the east of Indonesia that has been the most ruminant livestock population, therefore, it was dubbed as cattle shed. NTT area might be suitable to implement Cattle Rice Integration System that is an effort production increasing of meat livestock, it merely increased effort food production through the activity of looking cows after at integrating food plantation area that supported national needs meat ([Yusdja, et, al., 2004](#)). According to [Noor \(2004\)](#) in IPB seminar of Environmental Livestock Development stated that SIPT activity was agriculture system that environmental friendly sustainable, to optimal resources utilizing, keep and increasing human health and protecting the environment and producing enough food for the population. It means 2/3 of poor people looked after cattle in developing country and almost 60% included depending on the system of cattle-plant. Agricultural sense result at NTT in 2013 the large of non-agriculture is 396,19 m<sup>2</sup>, those are: the rice field land area is 1.228,38 m<sup>2</sup>, non-rice field area about 7.616,50 m<sup>2</sup>, the household amount that efforts subsector of food plantation about 701.852 peoples, horticultural subsector about 426.970 peoples and plantation subsector is 581.242 peoples. The amount of cow and buffalo have noted about 936.611 i.e. 803.450 beef cattle, dairy cows are 39 and 133.122 of buffalo. NTT regency has the most of cow and buffalo located in TTS regency, there are 162.342 cattle. Whereas East Flores regency, Location Quotient Analysis (LQ) [Hendayana \(2003\)](#).

$$LQ: \frac{pi / pt}{Pi / Pt}$$

(3) Location Density Analysis

Beef cows population (ST)

KW = Location large (Km2)

The criteria that is used i.e. a very solid category &gt; 50, solid &gt; 20 - 50, middle is 10 - 20 and seldom &lt; 10.

This research was intended to know: (1) Math relation model of population towards ruminant cattle (2) Math relation model among food land types, horticultural and plantation land area (3) Relation math model towards cattle type to the agricultural land types and plantation land area (4) LQ value of ruminant cattle.

**2. Materials and Methods***Population and Sample*

This research population was located in Kupang regency, TTS regency, and Belu regency. The survey was conducted to know the dairy beef potential, beef cattle and buffalo, measurement of food plant land, horticultural and plantation land area that analyzed based on critical studies and the existence of secondary data.

LQ (parameter value for determining the cattle population towards one location that shows the ability of population competence whether can be or not become cattle central)

pi = cattle population 'i' in Regency or city level

pt = total population of cattle group in regency level

Pi = cattle population 'i' in province level

Pt = total population of cattle group in province level.

The criteria that are used is LQ>1 means 'i' cattle in one location mastering comparative superiority (its population needs over in location itself, therefore, it can be shelled or exported to another location). LQ = 1 means 'i' cattle in one location there is no mastering comparative superiority (population is merely enough for consuming

itself).  $LQ < 1$  means 'i' cattle in one location cannot fulfill their need, therefore, needs a supply from another location.

#### *Location characteristic*

##### *a) Location spacious*

NTT location consists of mainland about 47.349,90 km<sup>2</sup> and water is about 200.000 km<sup>2</sup>. NTT province location comprehensively, the land area large in agriculture and agricultural land agriculture land Kupang regency 7661.55 km<sup>2</sup>. The large of food land and horticultural is Kupang regency, whereas the largest plantation in Belu regency.

##### *b) High place*

The most location of NTT province consists of mountain and hills, the high is 100-1000 m above the marine surface is about 73,13%, and the other location is bellowed 100 m and 1000 m above at the sea.

#### *The method of collecting the data*

The primary and secondary data were used in this research. The primary data is obtained by doing survey and observation, depth interviewing in field research, whereas, the secondary data is obtained by previously researches that related with conversion nominal of beef cows cattle population, dairy cows and buffalo in food land, horticultural, and plantation land area.

#### *The analyzing of the data*

Math model analysis relation among ruminant cattle types, land area types, and ruminant cattle towards agricultural land using Stef Wise Regression that is treated through Statistical Costas.

- Math relation among food land (X) towards beef cows population (Y) is obtained:  $Y = 110,23238792 - 1,7048432552 X$  and  $R^2 = 0,9838238238085$ . ( $P < 0.01$ ).
- Math relation among plantation land (X) towards beef cows population (Y) are:  $Y = 116,59960539 - 2,4734723692 X$  and  $R^2 = 0,983288695$  ( $P < 0.01$ ).
- Math relation among horticultural land area (X) towards beef cows population (Y) no real distinction ( $P > 0,05$ ). Determination coefficient  $R^2$  is about 0,98 means that relation between free variable (X) (land area) towards bound variable (Y) (cattle population) is about 98% i.e. the factor of free variable (land area) is to influence bound variable (Y) (cattle) is about 98% and the other is 2%, it is caused by other factors.

### **3. Results and Discussions**

#### *Data Collection*

The collecting of the research data was conducted as secondary to the veterinary department of NTT province was chosen as sampling included: Kupang regency, TTS regency Belu Regency, NTT province. *Life Descriptive* research is applied in this study that used to analyze the real data.

Table 1  
Ruminant cattle population at the three regencies in NTT province

Regency	Beef Cow	Dairy Cow	Buffalo
Kupang	99.607	3	868
TTS	109.303	28	324
Belu	115.823	6	51

Agricultural sense: 2013.

---

Sukada, I. K., Suarta, I. G., & Parimartha, I. N. W. (2016). The analysis of ruminant cattle potential as a source of meat production in east nusa tenggara regency. *International Research Journal of Engineering, IT & Scientific Research*, 2(5), 1-6. <https://sloap.org/journals/index.php/irjeis/article/view/401>

Table 2  
Location spacious of the agricultural land area at the three regencies in NTT province

Regency	Food	Horticultural	Plantation
Kupang	575,72	1.441,34	6.220,60
TTS	324,22	263,35	5.640,17
Belu	521,26	1.129,83	9.369,39

Agricultural sense 2013

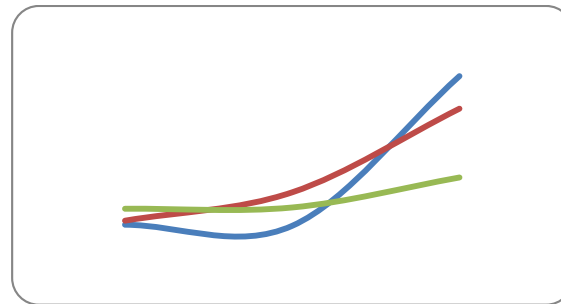


Figure 1. LQ value of cattle population at the three regencies in NTT

Table 3  
Prediction of LQ value calculation (ruminant cattle in NTT province)

Regency	Beef Cows	Dairy Cows	Buffalo
Kupang	0.119632	0.074229	6.291957
TTS	0.276214	1.457694	4.941606
Belu	0.781257	0.833766	2.076242

Descriptions:

LQ= Location Quoting

LQ<1 cattle population is still less

LQ=1 cattle population is merely enough for its location

LQ>1 cattle population can become cattle central for other location.

- (1) Dairy cows in TTS regency are able to be become cattle central due to bigger than one ( $LQ > 1$ ). Math relation among food land (X) towards beef cows population (Y) it was obtained:  $Y = 110,23238792 - 1,7048432552 X$  and  $R^2 = 0,9838238238085$  ( $P < 0.01$ ).
- (2) Math relation between plantation land area (X) towards beef cows population (Y) are:  $Y = 116,59960539 - 2,4734723692 X$  and  $R^2 = 0,983288695$  ( $P < 0.01$ ). Slope: 2,47347 Intercept: 116,59960 cattleman society life to the three regencies above.

The LQ lowest of beef cow population is in Kupang regency, as well as dairy cows LQ population is low in Kupang, however, the highest of buffalo population is in Kupang ( $LQ = 6.291957$ ). Next, it is followed by TTS regency ( $LQ = 4.941606$ ) and Belu regency of buffalo population is ( $LQ = 2.07$ ).

Table 4  
Calculation prediction of ruminant cattle location density in NTT province

Regency	Beef Cow	Dairy Cows	Buffalo
Kupang	130.0023	5.08173	826.7297
TTS	142.6532	47.4295	308.5949
Belu	151.1667	10.1635	48.57513

Description:

The criteria that was used i.e. very solid category  $> 50$ , solid  $> 20 - 50$ , middle  $10 - 20$  and seldom  $< 10$ . Dairy cow's population in Belu regency is seldom category. Otherwise, the three regencies are categorized as from solid up to very solid about cattle population.

#### 4. Conclusion

The livestock population towards food land and plantation is a positive relation in a very real ( $R^2 = 0,98$   $P < 0,01$ ). LQ value of the sustainable largest buffalo cattle is obtained in Kupang regency, TTS and Belu, therefore, there are can become buffalo cattle central for another district in NTT province. As well as, the regency that has been at least of cow and buffalo is 1.939. The most beef cow is in TTS regency, there are 161.990 cattle, as well as the most dairy cows is 28 cattle in TTS regency. Therefore, the sample is related in location are Kupang regency, TTS regency, and Belu regency.

*Conflict of interest statement and funding sources*

The authors declared that they have no competing interest. The study was financed by the authors.

*Statement of authorship*

The authors have a responsibility for the conception and design of the study. The authors have approved the final article.

*Acknowledgments*

We would like thanks the head of NTT veterinary department and the head of the statistical department of agricultural and veterinary NTT province for their support that was contributed on collecting the data, even, primary and secondary.

**References**

- Hendayana, R. (2003). Aplikasi metode Location Quotient (LQ) dalam penentuan komoditas unggulan nasional. *Informatika Pertanian*, 12(1), 658-675.
- Noor, R. R. (2004). Seminar Nasional Pengembangan Peternakan Berwawasan lingkungan. *IPB. Bogor*.
- Suryana, A. (2000, September). Harapan dan tantangan bagi subsektor peternakan dalam meningkatkan ketahanan pangan nasional. In *Pros. Seminar Nasional Peternakan dan Veteriner. Bogor* (pp. 18-19).
- Yusdja, Y., Sajuti, R., Suhartini, S. H., Sadikin, I., Winarso, B., & Muslim, C. (2004). Pemantapan program dan strategi kebijakan peningkatan produksi daging sapi. *Laporan Akhir. Puslitbang Sosial Ekonomi Pertanian, Bogor*, 10.